Leveraging for Better Investment Grounds: IPR Protection through PTAs and FDI

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1 Motivation behind this study

2 Theory

3 Hypotheses

4 Research design & data

5 Empirical results

6 Conclusion
Motivation of this research

- Existing literature: PTA is an effective institution to solve commitment problem

- Flip-the-script: PTA is a tool to satisfy private interests
Research question

Why do some countries end up signing PTAs which include utterly unfavorable clauses to themselves?

- E.g., IPR regulations, sanitary/phytosanitary measures, labor regulations, etc. → hindering development of emerging economies (Markusen, 2001; Kenneth C. Shadlen, 2005)

- Pharmaceutical-relevant IPR clauses in Korea-US FTA and Transpacific Partnership
MNCs demanding IPR protection

- MNCs as major holders of IPRs (Bessen, 2017)

- MNCs seeking to extend monopoly to market overseas (Autor et al., 2020)
  - Securing IPR crucial to their success in monopoly

- MNCs lobbying for product-specific protection (Matilde Bombardini and Francesco Trebbi, 2012)

- Abundant resources concentrated among MNCs to buy off political influence (Huneeus and Kim, 2018; Bombardini and Trebbi, 2020; Cowgill, Prat, and Valletti, 2021)
Leveraging market power

- IPR protection VS emerging economies (Markusen, 2001; Kenneth C. Shadlen, 2005)

- Trade dependence of emerging economies on developed nations (Bhattacharya, 1976; Brenton, 2003; Manger and Kenneth C Shadlen, 2014)

- Emerging economies in fear of losing prominent market overseas
Hypotheses

1. **Firms are more likely to increase FDI only after recipient countries sign PTAs with IPR provisions.** (Firm-FDI hypothesis)

2. **Countries with higher degree of trade network centrality are more likely to succeed in including substantive IPR protection in PTAs.** (Centrality hypothesis)
Dependent variable

- Firm-FDI hypothesis: \( M&A \) amount of firm \( i \), 1993-2018
- Firm-year data on M&A from Bloomberg Terminal (Shim and Stone, 2022)
Empirical strategy

Hypothesis 1 - Interaction-weighted (IW) estimator for cohort-specific average treatment effect on the treated (CATT) (Sun and Abraham, 2021)

- Treatment: Signing a PTA with IPR protection clause
- Treatment effect heterogeneity due to dynamic treatment timing
Empirical strategy (Cont’d)

1. Estimation of $CATT_{e,l}$:

$$Y_{k,t} = \alpha_k + \lambda_t + \sum_{e \notin C} \sum_{l \neq 1} \delta_{e,l} \{E_k = e\} \cdot D_{k,t}^l + \epsilon_{k,t}$$

2. Estimate weights of each cohort by sample shares of each cohort in relative time periods $l \in g$:

$$Pr\{E_k = e|E_k \in [-l, T - l]\}$$

3. IW estimator:

$$\hat{v}_g = \frac{1}{|g|} \sum_{l \in g} \sum_{e} \hat{\delta}_{e,l} \hat{Pr}\{E_k = e|E_k \in [-l, T - l]\}$$
## Results

### Table: IW Estimates for CATT

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before signature</td>
<td>-0.451</td>
<td>-0.443</td>
<td>-0.054</td>
</tr>
<tr>
<td></td>
<td>(0.306)</td>
<td>(0.485)</td>
<td>(0.457)</td>
</tr>
<tr>
<td>Signed, not enforced</td>
<td>-0.644*</td>
<td>-0.999*</td>
<td>0.277</td>
</tr>
<tr>
<td></td>
<td>(0.295)</td>
<td>(0.437)</td>
<td>(0.910)</td>
</tr>
<tr>
<td>After enforcement</td>
<td>0.804***</td>
<td>1.088***</td>
<td>1.206*</td>
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<tr>
<td></td>
<td>(0.201)</td>
<td>(0.266)</td>
<td>(0.546)</td>
</tr>
<tr>
<td>Year FE</td>
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<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Firm FE</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Covariates</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Control cohort</td>
<td>Never treated units</td>
<td>Never treated units</td>
<td>Last treated units</td>
</tr>
<tr>
<td>N</td>
<td>4,078</td>
<td>2,462</td>
<td>596</td>
</tr>
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</table>

Standard errors clustered at firm level in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Figure: Interaction-weighted (IW) estimates for CATT on IPR adoption
Overview on data

- Directed dyads
- Human Development Index \( \geq 0.8 \) and GDP per capita \( \geq $25,000 \) as cutoff for developed country status
- For convenience, country \( i \) can be understood as an FDI origin country and country \( j \) as an FDI recipient country.
Hypothesis 2: *IPR protection*

- a dichotomous variable indicating whether a trade agreement signed in year $t$ includes substantive regulatory provisions dedicated to IPR protection

- acquired from Design of Trade Agreements (DESTA) dataset listing reciprocal trade agreements in dyadic form, spans 2009 - 2018
Explanatory variable

- *Centrality*; (eigenvector centrality of country *i* within the global trade network, ranging between 0 and 1)

- Trade networks are built for each year *t* weighted by logged import values obtained from DOTS dataset (Statistics Department, International Monetary Fund, 2021) flowing in the direction of country *i* from *j* within each dyad.
Empirical strategy

Hypothesis 2 - Bivariate probit with selection

- Observation of *IPR protection* being solely contingent upon PTA participation status - selection bias issue

- 3 types of observations in the data
  1. dyadic pairs of countries that have no PTAs signed at all between themselves (*PTA = 0*)
  2. dyads that signed PTAs without IPR clauses (*PTA = 1 & IPR protection = 0*)
  3. dyads that have PTAs including IPR clauses (*PTA = 1 & IPR protection = 1*)

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Empirical strategy (Bivariate probit, cont’d)

1st stage: \( Pr(PTA = 1) = \Phi(Z\gamma) \)

2nd stage: \( Pr(IPR \text{ protection} = 1, PTA > 0) = \Phi_{bn}(Z\gamma, X\beta, \rho) \)

Exclusion restrictions: *Contiguity, Distance* (Mayer and Zignago, 2011)
Results

<table>
<thead>
<tr>
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<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDI</td>
<td>0.779*</td>
<td>1.070**</td>
<td>1.238**</td>
<td>1.507***</td>
</tr>
<tr>
<td>Centrality&lt;sub&gt;i&lt;/sub&gt;</td>
<td>0.779*</td>
<td>1.070**</td>
<td>1.238**</td>
<td>1.507***</td>
</tr>
<tr>
<td>ρ&lt;sup&gt;-1&lt;/sup&gt;</td>
<td>3.757***</td>
<td>3.764***</td>
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<td>(0.403)</td>
<td>(0.252)</td>
<td>(0.262)</td>
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<tr>
<td>N</td>
<td>10,893</td>
<td>10,639</td>
<td>8,867</td>
<td>8,660</td>
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</tbody>
</table>

Standard errors clustered at dyadic level in parentheses

Covariates *Veto players<sub>j</sub>* and *Trade volume* omitted from the table

* p < 0.05, ** p < 0.01, *** p < 0.001
Results

**Figure:** Human Development Index

**Figure:** GDP per capita

- Dependent variable is "IPR protection"
- Results robust to different cutoffs of GDP per capita
Robustness check

Table: 2SLS regression with fixed effects

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<tbody>
<tr>
<td></td>
<td>HDI</td>
<td>HDI</td>
<td>GDP pc</td>
<td>GDP pc</td>
</tr>
<tr>
<td>Centrality$_i$</td>
<td>0.262***</td>
<td>0.267***</td>
<td>0.186**</td>
<td>0.190**</td>
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<td></td>
<td>(0.049)</td>
<td>(0.050)</td>
<td>(0.061)</td>
<td>(0.063)</td>
</tr>
<tr>
<td>PTA</td>
<td>0.431***</td>
<td>0.434***</td>
<td>0.263**</td>
<td>0.263**</td>
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<tr>
<td></td>
<td>(0.068)</td>
<td>(0.068)</td>
<td>(0.081)</td>
<td>(0.081)</td>
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<tr>
<td>Year FE</td>
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<tr>
<td>Country FE</td>
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<td>Hansen J statistic</td>
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<td>$N$</td>
<td>10,893</td>
<td>10,639</td>
<td>8,867</td>
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</tr>
</tbody>
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Covariates Veto players$_j$ and Trade volume omitted from the table

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Recap & Implications

- MNCs want to monopolize the local market, home government twists the arms of FDI recipients

- PTA catering to private interests deviating from its original purpose
Thank you!